

### REMARKS

Claims 67-99 remain in this application. Claims 67, 77, 85, 87, and 94 have been amended. No claims have been added or cancelled. The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

#### 35 U.S.C. §103(a) Rejection – Perry and Pfister

The Examiner has rejected claims 67-75, 77-81, 83-90, 95, and 96 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,483,518 issued to Perry (hereinafter “Perry”) in view of U.S. Patent No. 6,498,607 issued to Pfister et al. (hereinafter “Pfister”). The Applicants respectfully submit that the present claims are allowable over Perry and Pfister.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant’s disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully submit that Perry and Pfister should not be combined. There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the teachings of Perry and Pfister. The Examiner has stated that it “*would have been obvious ... to*

*incorporate the local coordinate system for the nodes taught by Pfister into the data structure representation for the sampled distance field of Perry for performing a finite element structural analysis of the object, because using the surfel grid that defines at the resolution of an image plane or a display screen, it would provide efficiently render the surfel objects".* Applicants respectfully submit that this motivation is inappropriate. As understood by Applicants, Perry does not pertain to finite element structural analysis, and further finite element structural analysis is a non-analogous art. Furthermore, the Examiner has failed to explain or provide any reasoning why rendering efficiency would be improved in Perry by incorporating local coordinate system data, when it seems likely that additional processing would be needed to process the local coordinate system data. Perry pertains to hierarchical distance fields. In contrast, Pfister pertains to generating graphical objects that are represented by connected zero-dimensional points (see e.g., the Field of the Invention). The Examiner has failed to provide any motivation why local coordinates that are useful when objects are represented by connected zero-dimensional points would improve rendering efficiency when objects are represented by hierarchical distance fields. For at least these reasons, Applicants respectfully submit that the Examiner has failed to establish a prima facie case of obviousness.

As amended, **claim 67** recites a *"machine-readable data structure stored on a machine-readable medium comprising a graphical primitive to represent only a portion of a surface of an object, the data structure comprising: appearance data that indicates an appearance for each of a plurality of nodes of the graphical primitive that are associated with the portion of the surface of the object; displacement data of the graphical primitive that indicates displacement distances for the nodes from corresponding reference nodes; and local coordinate system data of the graphical primitive that indicates a local coordinate system for the plurality of nodes of the graphical primitive"*.

Applicants respectfully submit that neither Perry nor Pfister teach or suggest all of these limitations of claim 67. In particular, neither Perry nor Pfister teach or suggest: (1) **displacement data of the graphical primitive that indicates displacement distances for the nodes from corresponding reference nodes**; or (2) **local coordinate system data of the graphical primitive that indicates a local coordinate system for the plurality of nodes of the graphical primitive.**

(1) Firstly, Perry does not teach or suggest displacement data of the graphical primitive that indicates displacement distances for the nodes from corresponding reference nodes. In the Office Action mailed 8/3/05, the Examiner has alleged that this is disclosed in Perry at column 8, lines 13-14 and in reference numerals 106 and 107 shown in Figure 1. Applicants respectfully disagree with the Examiner's conclusion. Claim 67 clearly recites that displacement distances are taken from **multiple reference nodes**. In contrast, in Perry at column 8, lines 13-14 it is stated “[t]he signed distance field associated with the object 101 represents the distance 106 from any point in space 107 to the closest point 108 on the surface of the object 101”. Applicants respectfully submit that “any point in space 107” is not the same as “a corresponding reference node of a plurality of reference nodes”. As understood by Applicants, the point in space 107 may be a location of a ray. See e.g., column 13, lines 11-14. There is no teaching or suggestion that the point in space 107 is a reference node. Still further, the point in space 107 is only a single point, not a plurality of reference nodes. Accordingly, Perry does not teach or suggest displacement data of the graphical primitive that indicates displacement distances for the nodes from corresponding reference nodes.

(2) Secondly, as previously discussed, Perry does not teach or suggest local coordinate system data **of the graphical primitive** that indicates a local coordinate system for the plurality of nodes of the graphical primitive. The Examiner has previously conceded this when he stated “Perry does not disclose where the coordinate system data

is local to the nodes". In the present Office Action, the Examiner has stated that Perry discloses this at column 8, line 2. Applicants respectfully disagree. At column 8, lines 2-3 it is stated "[t]he size and location of the bounding box is specified by its vertices 109". As clearly shown in FIG. 1, the bounding box 100 encloses the whole object 101. The location of the whole object 101 and the enclosing bounding box 100 are defined in a world coordinate space defined by an origin 103 and axes 104 and 105. See e.g., column 7, lines 65-67. As shown in FIG. 5, the HDF header 500 can include a bounding box specification 510 defining the bounding box 100 of the HDF. See e.g., column 9, lines 50-52. Accordingly, as understood by Applicants, the whole object and its enclosing bounding box are defined by a world coordinate space. **There is no teaching or suggestion of a graphical primitive that represents only a portion of a surface of an object having local coordinate system data.**

Furthermore, the local coordinate systems of Pfister should not be combined with Perry. The discussion above is pertinent to this point.

For at least these reasons, claim 67, and its dependent claims, are believed to be allowable over Perry and Pfister. Independent claims 77, 85, 87, and 94, and their respective dependent claims, are believed to be allowable over Perry and Pfister for similar reasons.

### 35 U.S.C. §103(a) Rejection – Perry, Pfister, and Cox

The Examiner has rejected claims 76 and 82 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Pfister and further in view of U.S. Patent No. 5,751,931 issued to Cox, et al.

As discussed above, Perry and Pfister should not be combined. Therefore, at this time, Applicants do not address other aspects of the propriety of this rejection.

**35 U.S.C. §103(a) Rejection – Perry, Pfister, and Bodin**

The Examiner has rejected claims 91, 92, 98 and 99 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Pfister and further in view of U.S. Patent No. 6,760,784 issued to Bodin et al.

As discussed above, Perry and Pfister should not be combined. Therefore, at this time, Applicants do not address other aspects of the propriety of this rejection.

**35 U.S.C. §103(a) Rejection – Perry, Pfister, and Mori**

The Examiner has rejected claims 93, 94 and 97 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Pfister and further in view of U.S. Patent No. 6,704,018 issued to Mori, et al.

As discussed above, Perry and Pfister should not be combined. Therefore, at this time, Applicants do not address other aspects of the propriety of this rejection.

### Conclusion

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

### Request For Telephone Interview

The Examiner is invited to call Brent E. Vecchia at (303) 740-1980 if there remains any issue with allowance of the case.

### Request For An Extension Of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

### Charge Our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,  
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 2/6/06

Brent E Vecchia

Brent E. Vecchia  
Reg. No. 48,011

12400 Wilshire Boulevard  
Seventh Floor  
Los Angeles, California 90025-1030  
(303) 740-1980

Attorney Docket No.: 42390P8654  
Application No.: 09/823, 582

15